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AIR POLLUTION CONTROL ACTIVE RESEARCH GRANTS FOR FISCAL YEAR 1969

National Air Pollution Administration
Raleigh, North Carolina

October 1969

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ACTIVE RESEARCH GRANTS FOR FISCAL YEAR 1969

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U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Consumer Protection and Environmental Health Service

ENVIRONMENTAL PROTECTION AGENCY
ROOM 1015
WASHINGTON, D.C.

AIR POLLUTION CONTROL ACTIVE RESEARCH GRANTS FOR FISCAL YEAR 1969

OFFICE OF RESEARCH GRANTS
RESEARCH TRIANGLE PARK, N. C.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Consumer Protection and Environmental Health Service
National Air Pollution Control Administration
Raleigh, North Carolina
October 1969

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National Air Pollution Control Administration Publication No. APTD 69-21

FOREWORD

Under the authority of the Clean Air Act, the National Air Pollution Control Administration, Office of Research Grants, promotes and administers a research grants program with universities and other nonprofit organizations on the causes, effects, extent, prevention, and control of air pollution with respect to human health, welfare, and productivity. The purpose of this program is to promote and encourage research and development of new concepts, methods, and equipment for the establishment of air pollution standards and more effective air pollution control.

During fiscal year 1969, grants were awarded in eight major areas: human health effects, agricultural effects, socio-economic and political studies, analyses and physio-chemical investigations, development of analytic methods and equipment, meteorology, air pollution source control, and communications.

The grants listed herein represent those grants active during fiscal year 1969. In instances where no support is shown, these are grants already being supported which, for one reason or another, did not require that funds be awarded during this fiscal year. In some cases, the reader will note that project ending dates may have occurred prior to the end of the fiscal year; however, these grants are listed since they were active during the reporting period.

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NATIONAL AIR POLLUTION CONTROL ADMINISTRATION ACTIVE RESEARCH GRANTS FOR FISCAL YEAR 1969

Table 1. SUMMARY OF ACTIVE RESEARCH GRANTS IN FISCAL YEAR 1969

Research category	Number of grants	Amount
A. Air Pollution Effects on Human Health, Welfare, or Productivity	27	$1,049,191
B. Agricultural Effects of Air Pollution	28	815,762
C. Economic and Political Studies	8	271,567
D. Analysis and Physico-Chemical Investigations	102	3,142,114
E. Description and Control of Air Pollution Sources	50	1,800,061
F. Communication	6	310,158
Totals	221	$7,388,853

Table 2. DISTRIBUTION OF RESEARCH GRANTS WITHIN RESEARCH CATEGORIES IN FISCAL YEAR 1969

Total grants - 221	Total funds - $7,388,853		
	Number of grants	Amount	Percent of total funds
A. Air Pollution Effects on Human Health, Welfare, or Productivity	27	$1,049,191	14.2
1. Epidemiological and Statistical Studies	1	77,055	1.0
2. Broncho-Pulmonary Physiology and Pathology	7	245,209	3.3
3. Broncho-Pulmonary Diseases	3	349,249	4.7
4. Aeroallergens	3	55,169	0.8
5. Physiologic Effects of Specific Air Pollutants	13	322,509	4.4
B. Agricultural Effects of Air Pollution	28	815,762	11.0
1. On Plants	17	647,325	8.7
2. On Micro-organisms, Plant Cells and Tissues	10	156,728	2.1
3. Plant related-emissions, pollen, sinks for pollutants, etc.	1	11,709	0.2
C. Economic and Political Studies	8	271,567	3.7
1. Economic Studies	4	111,486	1.5
2. Economic Effects—Degradation of Materials	3	57,758	0.8
3. Political Studies	1	102,323	1.4
D. Analyses and Physico-Chemical Investigations	102	3,142,114	42.5
1. Gases	37	1,281,905	17.3
2. Aerosols and Particulates	19	445,522	6.0
3. Metals	2	66,932	0.9
4. Development of Analytic Methods and Equipment	28	891,993	12.1
a. For Gases	(18)	(622,724)	(8.4)
b. For Aerosols and Particulates	(7)	(195,053)	(2.7)
c. For Metals	(3)	(74,216)	(1.0)

Table 2 (continued). DISTRIBUTION OF RESEARCH GRANTS WITHIN RESEARCH CATEGORIES IN FISCAL YEAR 1969

	Number of grants	Amount	Percent of total funds
5. Meteorology	16	$ 455,762	6.2
	(1)	(24,490)	(0.3)
a. Basic Studies	(8)	(279,333)	(3.9)
b. Air Pollution Forecasting	(2)	(38,814)	(0.5)
c. Biometeorology	(5)	(113,125)	(1.5)
E. Description and Control of Air Pollution Sources	50	1,800,061	24.4
1. Combustion	9	201,202	2.7
2. Vehicle Emissions	11	524,430	7.1
3. Industrial Emissions	8	256,806	3.5
4. Development of Control Principles and Devices	22	817,573	11.1
F. Communication	6	310,153	4.2
Totals	221	$7,388,553	100.0

A. AIR POLLUTION EFFECTS ON HUMAN HEALTH, WELFARE, OR PRODUCTIVITY

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
1. Epidemiological and Statistical Studies			
AP 00045 - 09	H. David Kerr University of Maryland Baltimore, Maryland "Environmental Factors and Chronic Bronchitis"	2/1/67 - 1/31/70	$77,055
2. Broncho-Pulmonary Physiology and Pathology			
AP 00212-07	Lars T. Friberg Karolinska Institutet Stockholm, Sweden "Effect of Air Pollutants on Lung Clearance"	12/1/67 - 11/30/69	33,660
AP 00229-07	Jere Mead Harvard University Boston, Massachusetts "Mechanical Factors in the Control of Breathing"	9/1/65 - 8/31/70	39,069
AP 00321-10	John J. Ballenger Evanston Hospital Association Evanston, Illinois "Effect of Noxious Agents on Ciliated Epithelium"	1/1/67 - 12/31/69	18,164
AP 00424-04	Donald F. Proctor Johns Hopkins University Baltimore, Maryland "Physiology and Pathology of the Airways and Air Hygiene"	12/1/65 - 11/30/70	46,043
AP 00463-03S2	Arend Bouhuys John B. Pierce Foundation of Connecticut, Inc. New Haven, Connecticut "Physiological Studies on Air Pollution"	5/1/66 - 10/30/69	39,803*

*Includes "03S1" supplement - $1,600

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Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00607-02S1	Russell P. Sherwin University of Southern California Los Angeles, California "Pseudomonas in Tissue Cultures in Guinea Pig Lungs"	6/1/67 - 8/31/69	$ 7,970
AP 00608-03	T. Timothy Crocker University of California San Francisco, Calif. "Air Pollutants on Respiratory Mucosa in Organ Culture"	6/1/67 - 5/31/70	60,500
3. Broncho-Pulmonary Diseases			
AP 00484-04	Robert E. Snell Hospital for Sick Children Washington, D. C. "Atmospheric Pollution and Respiratory Infections"	6/1/69 - 5/31/72	280,780*
AP 00549-03	Quentin N. Myrvik Bowman Gray School of Medicine, Wake Forest Winston-Salem, N.C. "Air Pollution and Respiratory Disease"	2/1/67 - 1/31/72	28,419**
AP 00338-01	Stephen M. Ayres St. Vincent's Hospital and Medical Center New York, N.Y. "Chronic Lung Disease Response to Pollution Free Air"	5/1/69 - 4/30/72	40,050
4. Aeroallergens			
AP 00001-15	Kenneth P. Mathews University of Michigan Ann Arbor, Michigan "Atmospheric Pollution by Aeroallergens: Medical Phase"	3/1/65 - 2/28/70	46,079

*Includes "03S1" supplement - $13,746.
**Includes "02S1" supplement - $19.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00090-10S1	Donald W. Cowan University of Minnesota Minneapolis, Minnesota "Relationship of Air Pollution to Allergic Diseases"	1/1/66 - 9/30/69	$ 384
AP 00955-01	Thomas J. McDevitt Idaho State University Pocatello, Idaho "Allergic Evaluation of Industrial Emissions"	5/1/69 - 7/31/70	8,706
5. Physiologic Effects of Specific Air Pollutants - SO_x, NO_x, Lead, Ions, etc.			
AP 00002-10	Albert P. Krueger University of California Berkeley, California "Biological Effects of Gaseous Ions"	9/1/67 - 8/31/70	70,219
AP 00034-14	Mary O. Amdur Harvard University Boston, Massachusetts "Physiological Response to Atmospheric Pollutants"	9/1/64 - 8/31/69	63,103
AP 00260-07	Roger P. Smith Dartmouth College Hanover, New Hampshire "Sulfide Poisoning and Methemoglobinemia"	12/1/65 - 11/30/70	10,567
AP 00545-02S1	George T. Smith University of Nevada Reno, Nevada "The Toxicity of Terpenes as Air Pollutants"	2/1/67 - 11/30/69	0
AP 00563-02	J. Percy Baumberger Palo Alto Medical Research Foundation Palo Alto, California "Air Pollutants and Respiratory Properties of Blood"	2/1/67 - 8/31/69	None*

*Supported by FY 1968 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00606-02	Oscar J. Balchum University of Southern California Los Angeles, California "Biochemical Effects of Air Pollutants"	6/1/67 - 5/31/69	None*
AP 00653-02	Heriberto V. Thomas California State Department of Public Health Berkeley, California "Sputum Histamine and Inhalation Toxicity"	6/1/68 - 5/31/70	$42,675**
AP 00655-02	Peter K. Mueller California State Department of Public Health Berkeley, California "Respiratory Uptake of Gaseous Air Pollutants"	1/1/68 - 5/31/70	20,205
AP 00673-02	Frances L. Estes Baylor University Houston, Texas "Biochemical Effects of Simulated Air Pollutants"	8/1/68 - 7/31/71	37,195
AP 00726-01	James M. Ramsey University of Dayton Dayton, Ohio "CoHb and Driving Stability in Hypoxemic Patients"	6/1/68 - 5/31/69	None
AP 00774-01	Russell P. Sherwin Los Angeles County General Hospital Los Angeles, California "A Biologic Indicator for Air Pollution"	9/1/64 - 8/31/70	22,642
AP 00788-01	Alvin Felmeister Rutgers, The State University New Brunswick, N. J. "Study of Irradiated Air Pollutants on Spread Films"	12/1/68 - 11/30/71	37,154

*Supported by FY 1968 funds.
**Includes "01S1" supplement - $13,365.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00960-01	Frank A. Vingiello Northeast Louisiana State University Monroe, Louisiana "Polycyclic Aromatic Hydrocarbons"	10/1/68 - 9/30/69	$18,749

B. AGRICULTURAL EFFECTS OF AIR POLLUTION

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
1. On Plants			
AP 00040-08	W. M Dugger, Jr. University of California Riverside, California "Photochemical Effects of Oxidants on Plants"	9/1/64 - 8/31/70	$ 58,845
AP 00189-08	Leonard H. Weinstein Boyce-Thompson Institute for Plant Research Yonkers, New York "Effects of Fluorides on Plant Systems"	5/1/67 - 4/30/70	105,383
AP 00270-06	C. Ray Thompson University of California Riverside, California "The Total Effect of Air Pollutants on Bearing Citrus"	10/1/68 - 9/30/69	56,014
AP 00272-05	Ellis F. Darley University of California Riverside, California "Effects of Dusts on Vegetation"	9/1/67 - 8/31/70	29,293
AP 00276-06	Gene W. Miller Utah State University Logan, Utah "HF-Air Pollution and Intermediary Metabolism"	9/1/66 - 8/31/71	46,832
AP 00341-06	Merrill R. Pack Washington State University Pullman, Washington "Response of Plant Fruiting to HF Fumigation"	6/1/69 - 5/31/72	27,691
AP 00393-05	Saul Rich Connecticut Agricultural Experiment Station New Haven, Connecticut "Nature and Control of Ozone Injury to Plants"	6/1/68 - 5/31/71	20,935
AP 00436-03	Francis A. Wood Pennsylvania State Univ. University Park, Pennsylvania "Air Pollution Effects"	9/1/66 - 8/31/69	26,497

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Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00452-04	A. Clyde Hill University of Utah Salt Lake City, Utah "Effect of Air Pollutants on Plant Growth"	10/1/65 - 9/30/70	$52,964
AP 00544-03	Chester D. Leonard University of Florida Gainesville, Florida "Effects of Air-Borne Fluorides on Citrus"	2/1/67 - 1/31/72	56,091
AP 00613-02S1	Jack Altman Colorado State University Fort Collins, Colorado "Effect of Air Pollution Damage to Plants in Colorado"	6/1/67 - 12/31/69	6,670
AP 00630-02	Robert L. Barnes Duke University Durham, North Carolina "Biochemistry of Ozone Injury to Pines"	3/1/68 - 2/28/71	22,182
AP 00631-02	Kimball T. Harper University of Utah Salt Lake City, Utah "Impact of Air Pollutants on Ecosystems"	3/1/68 - 2/29/72	27,025
AP 00686-01	George R. Hoffman University of South Dakota Vermillion, South Dakota "The Effects of Atmospheric Pollution on Epiphytes"	6/1/68 - 5/31/71	None*
AP 00701-02	Henry D. Gerhold The Pennsylvania State University University Park, Pennsylvania "Breeding Trees Resistant to Air Pollutants"	6/1/68 - 5/31/72	68,543**
AP 00733-02	Eugene L. Sharp Montana State University Bozeman, Montana "Atmospheric Ions and the Infection Process of Fungi"	6/1/68 - 5/31/71	10,922

*Supported by FY 1968 funds.
**Includes "01S1" supplement - $30,617.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00874-01	Clarence C. Gordon University of Montana Missoula, Montana "A Study of Plants Growing in Polluted Atmospheres"	5/1/69 - 4/30/71	$31,458
2. On Micro-Organisms, Plant Cells and Tissues			
AP 00071-07	John B. Mudd University of California Riverside, California "Biochemical Effects of Air Pollutant Oxidants"	9/1/68 - 8/31/71	33,093
AP 00132-10	William S. Stewart California Arboretum Foundation, Inc. Arcadia, California "Effect of Air Pollutants on Tissue Growth of Plants"	4/1/68 - 12/31/69	None*
AP 00213-07A1	Lawrence Ordin University of California Riverside, California "Effect of Air Pollutants on Cell Growth"	12/1/68 - 11/30/71	48,426
AP 00330-02S2	Irving B. McNulty University of Utah Salt Lake City, Utah "The Effect of Ozone on Plant Metabolism"	5/1/66 - 12/31/68	816
AP 00356-03S1	William W. Thomson University of California Riverside, California "Effects of Air Pollutants on Plant Cell Structure"	5/1/66 - 8/31/69	11,501
AP 00536-02	Aly H. Mohamed University of Missouri Kansas City, Missouri "Cytogenetic Effects of Hydrogen Fluoride on Corn"	6/1/67 - 8/31/70	18,350
AP 00650-02	Leroy H. Wullstein University of Utah Salt Lake City, Utah "Nitrogen Pollutants and Their Fate in the Ecosystem"	9/1/67 - 8/31/70	16,282

*Supported by FY 1968 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00699-02	Mendel Mazelis University of California Davis, California "Effect of SO_2 on Metabolic Pathways in Higher Plants"	3/1/68 - 2/28/71	$ 9,231
AP 00729-01	Guenther Stotzky New York University New York, New York "Effect of Air Pollution on Soil and Plant Microbiotas"	2/1/65 - 1/31/70	None*
AP 00797-01	Craig R. Hibben Brooklyn Botanic Garden Brooklyn, New York "Air Pollution Effects on Powdery Mildew Fungi"	2/1/69 - 1/31/72	19,029
3. Plant Related – Emissions, Pollen, Sinks for Pollutants, etc.			
AP 00736-02	James W. Hanover Michigan State University East Lansing, Michigan "Essential Oils Evolved by Species of Pinaceae"	6/1/68 - 5/31/71	11,709

*Supported by FY 1968 funds

C. ECONOMIC AND POLITICAL STUDIES

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
1. Economic Studies			
AP 00512-02	Henry C. Wohlers Drexel Institute of Technology Philadelphia, Pennsylvania "Cost of Air Pollution Reduction in Delaware Valley"	6/1/68 - 5/31/70	$92,169*
AP 00556-03	Benjamin H. Stevens Regional Science Research Institute Philadelphia, Pennsylvania "Effects of Air Pollution on Optimal Urban Form"	2/1/67 - 1/31/70	12,813
AP 00767-02	Sidney Goren University of California Los Angeles, California "Stimulate Community Cooperation in Air Conservation"	4/1/68 - 3/31/70	6,504
AP 00792-01	Harvey M. Adelman University of Southern California Los Angeles, California "Exploration of Air Pollution and City Systems"	4/1/68 - 9/30/69	None**
2. Economic Effects — Degradation of Materials			
AP 00486-03S2	Hans H. G. Jellinek Clarkson College of Technology Pottsdam, New York "The Effects of Air Pollutants on Polymers"	1/1/66 - 12/31/69	20,640
AP 00499-03	Raymond M. Manganelli Rutgers, The State University New Brunswick, New Jersey "The Fate of Air Pollutants SO_2 and Textile Fibers"	3/1/67 - 2/28/70	11,719

*Includes "OIAISI supplement $33,360.
**Supported by FY 1968 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00542-03	Mary A. Morris University of California Davis, California "Effect of Air Pollutants on Textile Fabrics"	6/1/67 - 5/31/70	$ 25,399*
3. Political Studies			
AP 00534-03	Michael E. Eckstein New School for Social Research New York, New York "The Organizational Factors in Air Pollution Control"	9/1/68 - 8/31/70	102,323

*Includes "O2SI" supplement - $375.

D. ANALYSIS AND PHYSICO-CHEMICAL INVESTIGATIONS

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
1. Gases			
AP 00018-09	I. C. Hisatsune Pennsylvania State University University Park, Pennsylvania "Structures of Some Oxides of Nitrogen"	10/1/66 - 9/30/71	$21,739
AP 00104-10	Harold S. Johnston University of California Berkeley, California "Photochemistry of Substances Present in Urban Air"	5/1/68 - 4/30/73	29,977
AP 00109-10	James N. Pitts, Jr. University of California Riverside, California "Mechanisms of Photochemical Reactions in Urban Air"	12/1/68 - 11/30/71	98,540
AP 00131-09	Jack G. Calvert Ohio State University Research Foundation Columbus, Ohio "Mechanisms of Photochemically Initiated Oxidations"	1/1/68 - 12/31/72	93,058
AP 00265-06S1	William H. Corcoran California Institute of Technology Pasadena, California "Microkinetics Studies in Reactions of Nitric Oxide"	5/1/66 - 12/31/69	575
AP 00289-06	Edward A. Schuck University of California Riverside, California "Photochemistry of Polluted Atmospheres"	4/1/66 - 7/31/69	None*
AP 00353-05	Sidney W. Benson Stanford Research Institute Menlo Park, California "Kinetics and Thermochemistry of Free Radicals"	11/1/67 - 10/31/72	95,584

*Supported by FY 1968 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00357-05	Paul Urone University of Colorado Boulder, Colorado "Tracer Studies in Air Pollution: I. Sulfur Dioxide"	10/1/68 - 9/30/71	$20,735
AP 00390-05	Garnett R. McMillan Western Reserve University Cleveland, Ohio "Elementary Reaction in Polluted Atmospheres"	12/1/67 - 11/30/70	25,844
AP 00391-04	D. W. Setser Kansas State University Manhattan, Kansas "Kinetic Behavior of Inorganic Radicals"	9/1/65 - 8/31/70	32,292
AP 00398-02S1	Douglas M. Rosie University of Rhode Island Kingston, Rhode Island "Gas Phase Reactions of Amines with SO_2"	5/1/66 - 10/31/68	3,633
AP 00462-04	Sigmund Jaffe California State College at Los Angeles Los Angeles, California "Photolytic Oxidation in the Presence of NO_2"	1/1/69 - 12/31/69	23,500
AP 00497-03	Jack W. Powers Ripon College Ripon, Wisconsin "Reactions of Atomic Oxygen"	6/1/66 - 5/31/69	None*
AP 00502-03S1	Richard B. Timmons The Catholic University Washington, D. C. "Photochemical Decomposition of Sulfur Dioxide"	6/1/66 - 12/31/69	75
AP 00505-04	Paul R. Story University of Georgia Athens, Georgia "Mechanisms of Ozonolysis"	5/1/69 - 4/30/74	41,124
AP 00558-03	Robert C. Robbins Stanford Research Institute Menlo Park, California "CO Content of Glacial Ice and the Natural Atmosphere"	4/1/69 - 3/31/71	63,993

*Supported by FY 1968 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AF 00572-02	Leonard Dauerman New York University New York, New York "Nitrogen Trioxide from Nitrates"	2/1/67 - 1/31/70	None*
AP 00580-03	Paul R. Story University of Georgia Athens, Georgia "Chemistry and Properties of Ozonides"	5/1/67 - 4/30/71	$33,629
AP 00595-02	Hanns O. von Weyssenhoff Illinois Institute of Technology Chicago, Illinois "Photolysis and Fluorescence of the Oxides of Nitrogen"	9/1/67 - 8/31/69	24,416
AP 00596-02	Alfred Hassner University of Colorado Boulder, Colorado "The Chemistry and Photochemistry of Air Pollutants"	3/1/68 - 2/28/71	30,193
AP 00633-01	Simon H. Bauer Cornell University Ithaca, New York "Reactions of SO_2 with Hydrocarbons CO and H_2"	10/1/68 - 9/30/72	64,705
AP 00638-02	William A. Guillory Howard University Washington, D. C. "Matrix-Isolation of Nitrogen Oxides"	11/1/67 - 10/31/69	32,918*
AP 00639-01A1	C. Beat Meyer University of Washington Seattle, Washington "Chemistry of Sulfur in Hot Combustion Gases"	2/1/69 - 1/31/72	66,060
AP 00641-02	Lowell G. Wayne University of Southern California Los Angeles, California "Analog Study of Photochemical Smog Reaction Kinetics"	9/1/67 - 8/31/69	14,188

* Supported by FY 1968 funds.
**Includes "02S1" supplement - $10,000.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00675-02	Kent R. Wilson University of California, San Diego La Jolla, California "Primary Products of Photo Dissociation"	4/1/68 - 3/31/71	$78,532*
AP 00681-02	Christopher S. Foote University of California Los Angeles, California "Mechanisms of Photooxidation"	3/1/68 - 2/28/73	42,608
AP 00698-02	Sidney W. Benson Stanford Research Institute Menlo Park, California "Activation Energies for Radical and Molecular Reactions"	1/1/68 - 2/28/71	30,501
AP 00718-02	Julian P. Heicklen The Pennsylvania State University University Park, Pennsylvania "Photochemistry of Heterocyclic Molecules"	6/1/68 - 5/31/71	36,464
AP 00741-02	Clyde Orr, Jr. Georgia Institute of Technology Atlanta, Georgia "Atmospheric Contamination and Tribo Electrification"	6/1/68 - 5/31/70	25,598
AP 00742-02	Knsell L. Coulson University of California Davis, California "Ultraviolet Radiation in a Polluted Atmosphere"	6/1/68 - 5/31/71	13,579
AP 00768-01	Zdenek Sekera University of California Los Angeles, California "Polarization of EM Radiation in a Polluted Atmosphere"	6/1/68 - 5/31/71	None**
AP 00771-02	James N. Pitts University of California Riverside, California "Singlet Molecular Oxygen: Oxidation in Polluted Air"	6/1/68 - 5/31/71	63,770

* Includes "01S1" supplement - $9,792.
**Supported by FY 1968 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00794-01	James P. Collman Stanford University Stanford, California "Catalysts for Autoxidation of Toxic Gases"	6/1/69 - 5/31/71	$13,983
AP 00818-01	George D. Blyholder University of Arkansas Fayetteville, Arkansas "Heterogeneous Reactions in Air Pollution"	5/1/69 - 4/30/72	48,847
AP 00828-01	William E. Wilson, Jr. Battelle Memorial Institute Columbus, Ohio "Elementary Reactions in Photochemical Smog"	2/1/69 - 1/31/72	53,775
AP 00830-01	Edgar R. Stephens University of California Riverside, California "Photochemical Reactions in a Flow Reactor"	2/1/69 - 1/31/72	44,807
AP 00925-01	Robert W. Murray University of Missouri Columbia, Missouri "Chemistry of Singlet Oxygen from Ozone Sources"	2/1/69 - 1/31/72	30,833
AP 00931-01	Garnett R. McMillan Case Western Reserve Univ. Cleveland, Ohio "Photochemical Gas-Particle Interactions"	2/1/69 - 1/31/72	20,168
2. Aerosols and Particulates			
AP 00048-08	Milton Kerker Clarkson College of Technology Potsdam, New York "Physical Chemical Studies of Aerosols"	4/1/68 - 3/31/73	37,367
AP 00336-06	R. J. Charlson University of Washington Seattle, Washington "Influence of Aerosol Characteristics on Visibility"	2/1/68 - 1/31/71	40,825
AP 00421-04	E. J. Crosby University of Wisconsin Madison, Wisconsin "Coalescence of Drops in a Gaseous Medium"	9/1/68 - 8/31/71	21,130

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00431-05	Morton Corn University of Pittsburgh Pittsburgh, Pennsylvania "The Shape of Atmospheric Particles"	6/1/67 - 5/31/70	$49,510
AP 00453-03	Harold J. Paulus University of Minnesota Minneapolis, Minnesota "Urban Aerosol: Count-size Related to Meterologic Data"	6/1/66 - 11/30/69	None*
AP 00479-04	James R. Brock University of Texas Austin, Texas "Dynamical Theories of Knudsen Aerosols"	2/1/69 - 1/31/72	20,274
AP 00503-02S1	James A. Gieseke Battelle Memorial Institute Columbus, Ohio "Thermal Forces on Aerosol Particles"	6/1/67 - 11/30/69	104
AP 00511-03	Charles D. Hendricks University of Illinois Urbana, Illinois "Controlled Source of Uniform Liquid Droplets"	5/1/68 - 4/30/70	None*
AP 00543-03S1	Alexander Goetz Atmospheric Research Group Altadena, California "Formation and Decay of Atmospheric Aerosols"	1/1/67 - 7/31/69	31,483
AP 00585-02S1	John W. Winchester University of Michigan Ann Arbor, Michigan "Composition of Lead Halide Pollution Aerosols"	6/1/67 - 5/31/70	1,007
AP 00670-02	Simon L. Goren University of California Berkeley, California "Aerosol Filtration in Slip and Transition Flow"	6/1/68 - 5/31/71	7,204
AP 00680-02	Sheldon K. Friedlander California Institute of Technology Pasadena, California "Bioengineering Aspects of Air Pollution"	1/1/68 - 3/31/73	32,190

*Supported by FY 1968 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00743-02	Milton Kerker Clarkson College of Technology Potsdam, New York "Multiple Light Scattering of Polluted Atmospheres"	6/1/68 - 5/31/71	$23,979
AP 00748-01	Wallace B. Murcray University of Alaska College, Alaska "Effects of Ice Crystals on Radiative Cooling Rates"	5/1/69 - 4/30/70	46,982
AP 00758-02	Frank C. Goodrich Clarkson College of Technology Potsdam, New York "Kinetics of Particle Growth"	6/1/68 - 5/31/71	28,366*
AP00800-01	Myron L. Corrin Colorado State University Fort Collins, Colorado "Properties of Particulate Pollutants"	5/1/69 - 4/30/72	43,825
AP 00839-01	Kenneth T. Whitby University of Minnesota Minneapolis, Minnesota "Aerosol Measurements in Los Angeles Smog"	2/1/69 - 1/31/70	25,913
AP 00908-1	John D. Frohliger University of Pittsburgh Pittsburgh, Pennsylvania "Analysis of Chemical Compounds in an Urban Aerosol"	6/1/69 - 5/31/72	13,983
AP 00910-01	Gerhard W. Israel University of Maryland College Park, Maryland "Investigations of Beams of Submicron Particles"	2/1/69 - 1/31/70	21,380
3. Metals			
AP 00617-02	Robert A. Duce University of Hawaii Honolulu, Hawaii "Continental Trace Element Air Pollution in Hawaii"	3/1/68 - 2/28/71	34,883**
AP 00875-04	Tsaiheva J. Chow Scrysps Inst. of Oceanography La Jolla, California "Lead Isotopic Chemistry for Pollution Research"	1/1/69 - 12/31/71	32,049

*Includes "OISI" supplement - $7,585.
**Includes "02S1" supplement - $11,777.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
4. Development of Analytic Methods and Equipment			
a. For Gases			
AP 00308-06	Albert Zlatkis University of Houston Houston, Texas "Ionization Methods of Gas Analysis"	1/1/67 - 12/31/69	$32,943
AP 00432-04	Francis J. Norton State University of New York at Albany Albany, New York "Permeation Rates of Tracer Gases through Polymers"	5/1/69 - 4/30/72	18,176
AP 00485-04	Alfred W. von Smolinski University of Illinois Chicago, Illinois "Analytical Studies in Air Pollution"	12/1/65 - 11/30/69	19,139
AP 00501-03	Norman M. Trieff Drexel Institute of Technology Philadelphia, Pennsylvania "Study of Odor Components of Industrial Exhaust"	9/1/66 - 8/31/69	37,029*
AP 00516-02	Solomon Zaromb Zaromb Research Foundation Passaic, New Jersey "Remote Sensing of Invisible Air Pollutants"	3/1/68 - 2/28/70	66,295
AP 000578-02	William H. Prengle, Jr. University of Houston Houston, Texas "Pollutants in Chimney Stack Plumes"	6/1/68 - 5/31/71	29,471
AP 00591-03	David T. Williams University of Florida Gainesville, Florida "Portable Spectrometric Analyzer for Air Pollutants"	6/1/67 - 5/31/70	28,430
AP 00640-01	Martin V. Sussman Tufts University Medford, Massachusetts "Continuous Chromatographic Monitoring of Gas Streams"	1/1/68 - 9/30/70	28,787

*Includes "O2S1" supplement - $506.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00812-01	Bernard E. Saltzman University of Cincinnati Cincinnati, Ohio "Development of Air Sampling Methodology"	2/1/69 - 1/31/72	$67,870
AP 00814-01	H. P. Burchfield Gulf South Research Institute Baton Rouge, Louisiana "GLC Detector for Carcinogenic Hydrocarbons"	5/1/69 - 4/30/72	53,183
AP 00816-01	Clyde Orr, Jr. Georgia Institute of Technology Atlanta, Georgia "Homogeneous Nucleation in Contaminated Atmospheres"	4/1/69 - 3/31/71	31,636
AP 00834-01	Eldon L. Knuth University of California, Los Angeles Los Angeles, California "Molecular-Beam Sampling from Cycling-Pressure Sources"	2/1/69 - 1/31/71	50,356
AP 00859-01S1	Donald Yankovich Massachusetts Institute of Technology Cambridge, Massachusetts "Study of Computer Controlled Electron Microscopy"	6/1/68 - 5/31/69	80,116
AP 00860-01S1	Parker C. Reist Harvard University Boston, Massachusetts "Study of Computer Controlled Electron Microscopy"	6/1/68 - 5/31/69	228
AP 00890-01	Stanley E. Manahan University of Missouri Columbia, Missouri "A New Approach to Automated Sulfur Dioxide Analysis"	2/1/69 - 7/31/70	3,599
AP 00974-01	Donald F. Adams Washington State University Pullman, Washington "Development of a Fluoride-Specific Microelectrode"	5/1/69 - 7/31/70	9,541

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 01004-01	Leonard B. Sand Worcester Polytechnic Institute Worcester, Massachusetts "New Inorganic Materials for Sulfur Oxide Removal"	5/1/69 - 4/30/72	$27,587
b. For Aerosols and Particulates			
AP 00136-09	Kenneth T. Whitley University of Minnesota Minneapolis, Minnesota "Generation and Decay of Small Ions"	5/1/67 - 4/30/70	29,394*
AP 00367-04	Frank T. Gucker Indiana University Foundation Bloomington, Indiana "Physical Chemistry of Aerosols"	10/1/65 - 9/30/71	73,163
AP 00370-05	Charles W. Gruber Cincinnati Bureau of Air Pollution Control Cincinnati, Ohio "Particulate Sampling by Adhesive Coated Materials"	10/1/67 - 9/30/69	4,632
AP 00372-04	Harry U. Rhoads Saint Louis University Saint Louis, Missouri "Analysis of Atmospheric Dust by Electron Optics"	2/1/69 - 1/31/70	34,647
AP 00468-04	Othmar Preining University of Vienna Vienna, Austria "Studies on Aerosols of Sizes Down to 0.05 Micron"	4/1/69 - 3/31/72	10,800
AP 00480-04	Kenneth T. Whitby University of Minnesota Minneapolis, Minnesota "Study of Atomizer Aerosol Generators"	5/1/68 - 4/30/71	22,018
AP 00728-02	Peter K. Mueller California State Department of Public Health Berkeley, California "Characterizing Asbestos-Bearing Aerosols"	6/1/68 - 5/31/71	20,399

*Includes "08S1" supplement - $387.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
c. For Metals			
AP 00128-08	Philip W. West Louisiana State University Baton Rouge, Louisiana "Atomic Absorption Spectroscopy of Trace Pollutants"	1/1/67 - 12/31/69	$32,342
AP 00444-04	Carl E. Moore Loyola University Chicago, Illinois "Study of Air Pollutants by Absorption Spectroscopy"	4/1/68 - 3/31/70	7,226
AP 00519-03	Roy G. Post University of Arizona Tucson, Arizona "Activation Analysis of Atmospheric Particulates"	9/1/66 - 8/31/69	34,648
5. Meteorology			
AP 00672-02	Edward D. Goldberg University of California, San Diego La Jolla, California "Air Transport of Pollutants to the Marine Environment"	3/1/68 - 2/28/71	24,490
a. Basic Studies			
AP 00449-03	Takeshi Ohtake University of Alaska College, Alaska "Investigation of Ice Fog Problems"	10/1/65 - 12/31/69	None*
AP 00601-03	Dave Fultz University of Chicago Chicago, Illinois "Atmospheric Diffusion Model Experiments, Feasibility"	5/1/67 - 4/30/70	66,485
AP 00609-03	Herman Newstein Drexel Institute of Technology Philadelphia, Pennsylvania "Atmospheric Diffusion of Radon"	6/1/67 - 5/31/70	38,338

*Supported by FY 1968 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00627-02	Mead L. Jensen University of Utah Salt Lake City, Utah "Atmospheric Fluids Provenance Using Stable Isotopes"	1/1/68 - 5/31/71	$46,877
AP 00661-01	Sandor A. Veress University of Washington Seattle, Washington "Study of Three Dimensional Extension of Polluted Air"	6/1/68 - 12/31/69	None*
AP 00678-02	James A. Fay Massachusetts Institute of Technology Cambridge, Massachusetts "Dispersion of Air Pollutants"	6/1/68 - 5/31/71	74,667**
AP 00769-01	James Halitsky New York University New York, New York "Effect of Turbulence on Gas Diffusion Around Obstacles"	4/1/68 - 7/31/69	None*
AP 00893-01	Fred V. Brock University of Michigan Ann Arbor, Michigan "Design of a Great Lakes Region Air Pollution Model"	2/1/69 - 1/31/71	52,966
b. Air Pollution Forecasting			
AP 00611-03	John F. Griffiths Texas A & M University College Station, Texas "A Time and Space Study of Atmospheric Pollutants"	6/1/67 - 5/31/70	28,823
AP 00895-01	E. Stanley Lee Kansas State University Manhattan, Kansas "Adaptive Modeling for Air Pollution Control"	2/1/69 - 7/31/70	9,991
c. Biometeorology			
AP 00080-13	Stuart M. Pady Kansas State University Manhattan, Kansas "Diurnal Investigations of Airborne Fungi"	4/1/68 - 3/31/71	18,572

*Supported by FY 1968 funds.
**Includes "O1S1" supplement - $939.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00081-11	Eugene C. Ogden State University of New York at Albany Albany, New York "Travels of Airborne Pollen"	10/1/65 - 9/30/70	$48,900
AP 00456-03	Murray F. Buell Rutgers, The State University New Brunswick, New Jersey "Changing Vegetation and Atmospheric Pollen"	5/1/66 - 1/31/70	16,576
AP 00553-02	Ivan W. Buddenhagen University of Hawaii Honolulu, Hawaii "Air-Spora in Hawaii"	2/1/67 - 7/31/71	24,243
AP 00581-02	William Edwin Booth Montana State University Bozeman, Montana "Aerobiological Survey in the Northern Rocky Mountains and Plains"	6/1/67 - 5/31/71	4,834

E. DESCRIPTION AND CONTROL OF AIR POLLUTION SOURCES

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
1. Combustion			
AP 00039-06	Jimmie E. Quon Northwestern University Evanston, Illinois "Significance of Combustion Nuclei to Air Pollution"	10/1/66 - 9/30/69	$16,964
AP 00397-04S1	Robert H. Essenhigh The Pennsylvania State University University Park, Pennsylvania "Incinerator Processes and Emissions"	5/1/65 - 4/30/70	3,439
AP 00464-04	Arthur Levy Battelle Memorial Institute Columbus, Ohio "Kinetics of Sulfur-Oxide Formation in Flames"	4/1/69 - 3/31/71	49,876
AP 00478-02	Richard H. Wiley University of New York Hunter College New York, New York "Radical Control in Combustion Products"	6/1/66 - 5/31/69	None*
AP 00504-03	Richard W. Boubel Oregon State University Corvallis, Oregon "Air Pollution from Agricultural and Forestry Burning"	2/1/67 - 1/31/70	31,710
AP 00562-03	Donald F. Adams Washington State University Pullman, Washington "Composition and Distribution of Forest Fire Smoke"	2/1/67 - 1/31/71	39,028**
AP 00568-03	Ellis F. Darley University of California Riverside, California "Characterization of Smoke from Cellulosic Fuels"	2/1/67 - 1/31/70	27,237

*Supported by funds awarded in FY 1967.
**Includes "02S1 supplement - $10,436.

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Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00643-02	Robert J. Heinsohn Pennsylvania State University University Park, Pennsylvania "Use of Electric Fields in Combustion"	3/1/68 - 2/28/71	$32,804
AP 00724-01S1	Philip W. West Louisiana State Univ. Baton Rouge, La. "Selenium and Its Significance as an Air Pollutant"	6/1/68 - 5/31/69	144
2. Vehicle Emissions			
AP 00275-06	Bernard D. Tebbens University of California Berkeley, California "UCB-ENG-2365--Aromatic By-Products of Combustion"	9/1/66 - 8/31/71	50,297
AP 00323-05	Ronald Long University of Birmingham Edgbaston, Birmingham, England "Reduction of Polycyclic Aromatic Hydrocarbons"	1/1/68 - 12/31/70	4,290
AP 00365-05	Jay A. Bolt University of Michigan Ann Arbor, Michigan "Carburetors, Reduction of Engine Exhaust Emissions"	9/1/67 - 8/31/71	50,492
AP 00385-04	Ernest S. Starkman University of California Berkeley, California "UCB-ENG--2045--Combustion Gas Composition"	8/1/68 - 7/31/72	103,968
AP 00560-03	Wolfgang E. Meyer Pennsylvania State University University Park, Pennsylvania "Engine Emission Reduction by Combustion Control"	2/1/67 - 1/31/70	52,262
AP 00576-03	John T. Agnew Drexel Institute of Technology Philadelphia, Pennsylvania "Diesel Fuel Combustion Chemistry as Related to Odor"	6/1/67 - 5/31/70	53,589*

*Includes "02S1" supplement - $20,000.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00582-03	Henry K. Newhall University of Wisconsin Madison, Wisconsin "Combustion Process Analysis"	6/1/67 - 5/31/70	$18,888*
AP 00763-02	Abraham Hertzberg University of Washington Seattle, Washington "Kinetics of Nitrogen-Oxide Automotive Pollution"	6/1/68 - 5/31/71	58,169
AP 00835-01	Jay A. Bolt University of Michigan Ann Arbor, Michigan "Fuel Injection System Analysis: Diesel Smoke Reduction"	2/1/69 - 1/31/73	49,614
AP 00858-01	Richard A. Matula Drexel Institute of Technology Philadelphia, Pennsylvania "Kinetics of Nitric Oxide at High Temperatures"	4/1/69 - 3/31/72	46,526
AP 00906-01	Richard L. Peskin Rutgers, The State University New Brunswick, New Jersey "Liquid Fuel Ignition and Combustion"	2/1/69 - 1/31/72	36,385
3. Industrial Emissions - Kraft Pulping Process			
AP 00301-06	Jerome F. Thomas University of California Berkeley, California "Malodorous Products of Kraft Black Liquor Combustion"	9/1/66 - 8/31/69	51,523
AP 00363-05	Kyosti V. Sarkanen University of Washington Seattle, Washington "Odor Formation in Alkaline Pulping"	1/1/68 - 12/31/70	53,551
AP 00383-05	Irwin B. Douglass University of Maine Orono, Maine "Chemical Factors Related to Kraft Odor Control"	10/1/67 - 9/30/70	23,966

*Includes "02S1 supplement - $2,000.

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AP 00475-03	Michael J. Schaer Montana State University Bozeman, Montana "Pollution Abatement by Process Gas Chromatography"	10/1/68 - 9/30/71	$23,103
AP 00589-02	Ewin A. Eads Lamar State College of Technology Beaumont, Texas "Attempts to Control Kraft Mill Odor"	11/1/67 - 10/31/69	32,862*
AP 00612-02	William J. Noland University of Florida Gainesville, Florida "Pre-Pulping Chip Extraction to Reduce Environmental Pollution"	6/1/67 - 5/31/69	None**
AP 00791-01	W. Leigh Short University of Massachusetts Amherst, Massachusetts "SO_2 and NO_2 Removals from Stack Gases by CO"	2/1/69 - 1/31/72	45,051
AP 00961-01	Francis E. Murray University of British Columbia Vancouver, British Columbia Canada "Gas Phase Kinetics of Kraft Mill Pollutants"	12/1/68 - 11/30/69	26,750
4. Development of Control Principles and Devices			
AP 00246-06	Herman L. Shulman Clarkson College of Technology Potsdam, New York "Kinetics of Adsorption by Molecular Sieves"	8/1/66 - 7/31/69	22,528
AP 00387-05	Eugene Petersen University of California Berkeley, California "Catalytic Reduction of Oxides of Nitrogen"	12/1/67 - 11/30/70	16,020

* Includes "01S1" supplement - $3,036.
**Supported by FY 1968 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00388-05	Max S. Peters University of Colorado Boulder, Colorado "Catalytic Mechanisms for Nitrogen Oxides Reduction"	1/1/65 - 12/31/69	$26,310
AP 00406-04	Philip L. Walker, Jr. Pennsylvania State University University Park, Pennsylvania "Interaction of Flue Gases with Carbon Surfaces"	12/1/63 - 11/30/71	18,952
AP 00422-02	James L. McAtee, Jr. Baylor University Waco, Texas "Crystal Structure Determination of Stable Ozonides"	10/1/66 - 8/31/69	14,311
AP 00498-04	Imre Zwiebel Worcester Polytechnic Institute Worcester, Massachusetts "Multicomponent Equilibrium Adsorption: Air Pollution"	6/1/66 - 5/31/69	52,753*
AP 00513-03	Charles N. Satterfield Massachusetts Institute of Technology Cambridge, Massachusetts "Hetero-Homogeneous Catalysis of Air Pollutants"	6/1/66 - 5/31/70	None**
AP 00517-04	Harold J. Gulskoter University of Illinois Urbana, Illinois "Mineral Matter in Coal"	6/1/69 - 5/31/72	34,141
AP 00541-03	Shao L. Soo University of Illinois Urbana, Illinois "Boundary Layer Flow in Electrostatic Precipitators"	3/1/67 - 2/28/70	41,354
AP 00552-03	Alvin W. Czanderna Clarkson College of Technology Potsdam, New York "The Effect of Air Pollutants on Solid Surfaces"	2/1/67 - 4/30/70	17,264

*Includes "03S1" supplement - $793.
**Supported by FY 1968 funds.

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AP 00574-02	Lauri Vaska Clarkson College of Technology Potsdam, New York "Reversible Metal Complexes with Air Pollutants"	5/1/67 - 7/31/70	$29,968
AP 00577-02	Joseph F. Walling Battelle Memorial Institute Columbus, Ohio "Catalytic Decomposition of NO in Flue Gas"	6/1/67 - 5/31/69	None*
AP 00669-03	Manfred J. D. Low New York University New York, New York "Fundamentals of Air Cleaning by Sorption Processes"	6/1/68 - 5/31/72	70,322
AP 00692-01	Arthur M. Squires The City College New York, New York "Filtration of Aerosols by Granular Beds"	6/1/68 - 5/31/71	None*
AP 00717-02	John Happel New York University Bronx, New York "Sulfur Dioxide Oxidation"	1/1/68 - 5/31/71	36,531
AP 00723-02	Seymour Calvert University of California Riverside, California "Basic Study of Air Pollution Control Wet Scrubbers"	9/1/68 - 8/31/72	81,641
AP 00733-01S1	Robert W. Coughlin Lehigh University Bethlehem, Pennsylvania "Regeneration of Carbon Adsorbents for SO_2"	6/1/68 - 5/31/71	22,798
AP 00833-01	Herbert L. Toor Carnegie-Mellon University Pittsburgh, Pennsysvania "SO_2 Sorption by and Removal from Polymeric Materials"	2/1/69 - 1/31/72	33,057
AP 00842-01	Walter Isard Harvard University Cambridge, Massachusetts "Air Quality Management for a Regional System"	5/1/69 - 4/30/72	115,570

*Supported by FY 1968 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00876-01	Robert W. Bartlett Stanford University Stanford, California "Sulfation Kinetics in SO_2 Absorption from Flue Gas"	5/1/69 - 4/30/72	$28,136
AP 00913-01	Ken Nobe University of California Los Angeles, California "Air Pollution Control by Catalysis"	5/1/69 - 4/30/72	77,707
AP 00945-01	Arthur M. Squires City College Research Foundation New York, New York "Desulfurization of Fuels by Calcined Dolomite"	4/1/69 - 3/31/72	77,705

F. COMMUNICATION

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 69 Support
AP 00256-06S1	E. R. Hendrickson American Public Health Association, Inc. New York, New York "Manual of Methods for Ambient Air Sampling and Analysis"	6/1/66 - 8/31/69	$9,200
AP 00415-03	Murdock Head George Washington University Washington, D. C. "Audiovisual Methods for Air Pollution Information"	5/1/65 - 4/30/70	None*
AP 00489-04	James G. Telfer American Medical Association Chicago, Illinois "Air Pollution Medical Research Conference"	1/1/66 - 12/31/70	0
AP 00508-04	Knud W. Leffland University of Southern California Los Angeles, California "COMEX - Air Pollution Computer Research Project"	6/1/68 - 5/31/71	267,416
AP 00786-01	Michael Y. Nuttonson American Institute of Crop Ecology Silver Spring, Maryland "USSR Literature on Air Pollution and Related Diseases"	1/1/69 - 12/31/73	30,590
AP 00957-01	Gunter Zweig Syracuse University Research Corporation Syracuse, New York "Workshop on Air Pollution Research"	4/1/69 - 3/31/70	2,952

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AP-00541-03	E-4
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AP-00543-03S1	D-2
AP-00544-03	B-1
AP-00545-02S1	A-5
AP-00549-03	A-3
AP-00552-03	E-4
AP-00553-02	D-5-c
AP-00556-03	C-1
AP-00558-03	D-1
AP-00560-03	E-2
AP-00562-03	E-1
AP-00563-03	A-5
AP-00568-03	E-1
AP-00572-02	D-1
AP-00574-02	E-4
AP-00576-03	E-2
AP-00577-02	E-4
AP-00578-02	D-4-a
AP-00580-03	D-1
AP-00581-02	D-5-c
AP-00582-03	E-2
AP-00585-02S1	D-2
AP-00586-02	B-2
AP-00589-02	E-3
AP-00591-03	D-4-a
AP-00595-02	D-1
AP-00596-02	D-1
AP-00601-03	D-5-a
AP-00606-02	A-5
AP-00607-02S1	A-2
AP-00608-03	A-2
AP-00609-03	D-5-a
AP-00611-03	D-5-b
AP-00612-02	E-3
AP-00613-02S1	B-1
AP-00617-02	D-3
AP-00627-02	D-5-a

Grant number	Category
AP-00630-02	B-1
AP-00631-02	B-1
AP-00633-01	D-1
AP-00638-02	D-1
AP-00639-01A1	D-1
AP-00640-01	D-4-a
AP-00641-02	D-1
AP-00643-02	E-1
AP-00650-02	B-2
AP-00653-02	A-5
AP-00655-02	A-5
AP-00661-01	D-5-a
AP-00669-03	E-4
AP-00670-02	D-2
AP-00672-02	D-5
AP-00673-02	A-5
AP-00675-02	D-1
AP-00678-02	D-5-a
AP-00680-02	D-2
AP-00681-02	D-1
AP-00686-01	B-1
AP-00692-01	E-4
AP-00698-02	D-1
AP-00699-02	B-2
AP-00701-02	B-1
AP-00717-02	E-4
AP-00718-02	D-1
AP-00723-02	E-4
AP-00724-01S1	E-1
AP-00726-01	A-5
AP-00728-02	D-4-b
AP-00729-01	B-2
AP-00733-02	B-1
AP-00736-02	B-3
AP-00738-01S1	E-4
AP-00741-02	D-1
AP-00742-02	D-1
AP-00743-02	D-2
AP-00748-01	D-2
AP-00758-02	D-2
AP-00763-02	E-2
AP-00767-02	C-1
AP-00768-01	D-1
AP-00769-01	D-5-a
AP-00771-02	D-1
AP-00774-01	A-5
AP-00786-01	F
AP-00788-01	A-5
AP-00791-01	E-3
AP-00792-01	C-1

Grant number	Category	Grant number	Category
AP-00794-01	D-1	AP-00875-04	D-3
AP-00797-01	B-2	AP-00876-01	E-4
AP-00800-01	D-2	AP-00890-01	D-4-a
AP-00812-01	D-4-a	AP-00893-01	D-5-a
AP-00814-01	D-4-a	AP-00895-01	D-5-b
AP-00816-01	D-4-a	AP-00906-01	E-2
AP-00818-01	D-1	AP-00908-01	D-2
AP-00828-01	D-1	AP-00910-01	D-2
AP-00830-01	D-1	AP-00913-01	E-4
AP-00833-01	E-4	AP-00925-01	D-1
AP-00834-01	D-4-a	AP-00931-01	D-1
AP-00835-01	E-2	AP-00945-01	E-4
AP-00838-01	A-3	AP-00955-01	A-4
AP-00839-01	D-2	AP-00957-01	F
AP-00842-01	E-4	AP-00960-01	A-5
AP-00858-01	E-2	AP-00961-01	E-3
AP-00859-01S1	D-4-a	AP-00974-01	D-4-a
AP-00860-01S1	D-4-a	AP-01004-01	D-4-a
AP-00874-01	B-1		